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THE AGRICULTURAL STUDENT

OHIO STATE UNIVERSITY, COLUMBUS, OHIO



OCTOBER 1916

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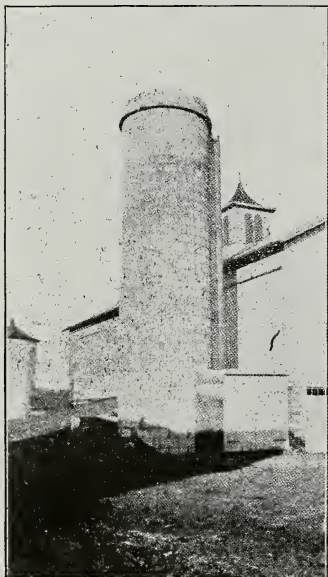
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WITH THE "TENTHS" COUNTED				SAME WITHOUT "TENTHS" COUNTED			
	Cream	Test	Fat		Cream	Test	Fat
May 3.....	39.9	34.8	13.88	May 3.....	39	34	13.26
May 5.....	35.6	37.8	13.45	May 5.....	35	37	12.95
May 8.....	38.5	37.5	14.43	May 8.....	38	37	14.06
May 12.....	39.2	32.8	12.85	May 12.....	39	32	12.48
May 13.....	39.7	41.8	16.59	May 13.....	39	41	15.99
May 18.....	39.5	34.8	13.74	May 18.....	39	34	13.26
May 20.....	40.5	34.0	13.77	May 20.....	40	34	13.60
May 23.....	38.4	34.2	13.13	May 23.....	38	34	12.92
May 27.....	39.6	36.8	14.57	May 27.....	39	36	14.04
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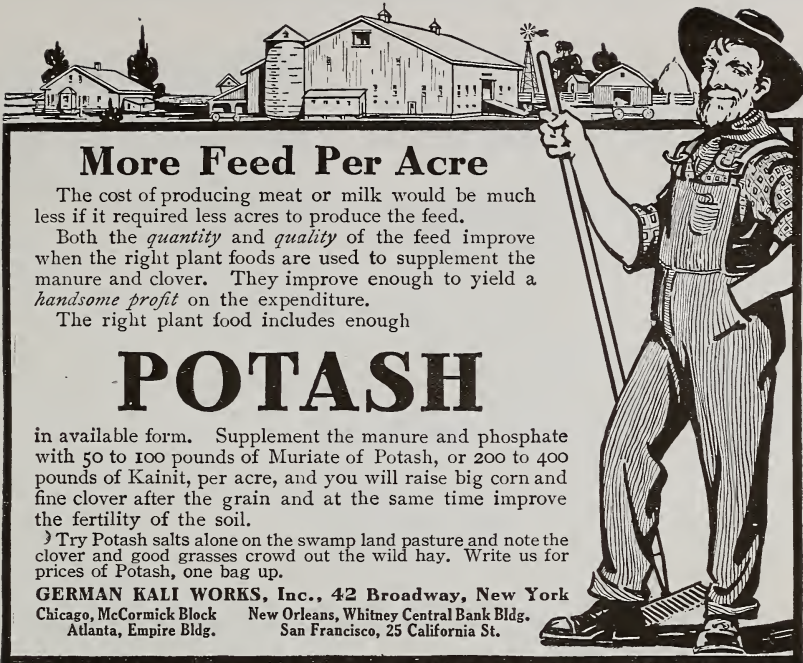
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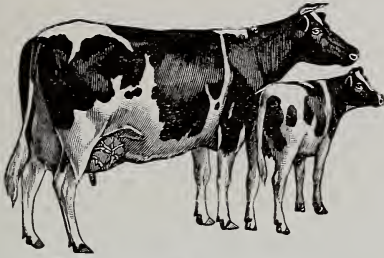
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THE AGRICULTURAL STUDENT

Vol. XXIII. OHIO STATE UNIVERSITY, COLUMBUS, OCTOBER, 1916

No. 2

PROFESSOR WILLIAM R. LAZENBY DEAD

**Was One of the Founders of the Ohio Agricultural Experiment Station;
Oldest Member of the Agricultural College Faculty; and a
Writer, Scientist and Teacher**

WILLIAM RANE LAZENBY, professor and head of the department of forestry, died of pneumonia on September 15. He was born at Bellona, Yates County, New York, on December 5, 1850. After receiving his elementary and high school training in the village schools he entered Cornell University from which he graduated in 1874 with the degree of Bachelor of Agriculture.

Since graduation Prof. Lazenby was instructor in horticulture and botany at Cornell from 1874 to 1878 and assistant professor until 1881. In 1881 he came to Ohio State University as professor of botany and horticulture. As the University grew he became professor of horticulture and forestry and later professor of forestry.

He was one of the founders of the Ohio Agricultural Experiment Station and its first director. He had been collaborator for the U. S. bureau of forestry for four years, secretary of the Ohio Medical University for 12 years from 1902 to 1914, when it was consolidated with Ohio State University and

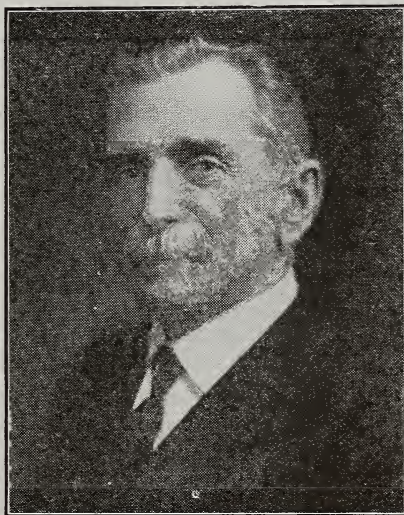
secretary of the College of Agriculture from 1896 to 1906. All these positions he held while he was actively engaged in serving as a regular member of the faculty of the College of Agriculture.

In point of service he is the second oldest member on the faculty of the Ohio State University, being ranked by

Professor Samuel Carroll Derby but a little more than two months and the oldest member of the agricultural college faculty. He saw the University grow from a small beginning of a few hundred students until it had an enrollment of nearly 6900 students.

His contributions to the text books of his favorite sciences were many and his honors voluminous. He also

contributed frequently to farm papers and was well known as a speaker at farmers' meetings in many parts of the country. He spent many of his summer vacations in studying horticulture and forestry in Europe. Professor Lazenby was a member of the American Association for the Advancement of Science; Ohio Academy of Science; American Pomological Associ-



Prof. W. R. Lazenby

Courtesy Ohio Farmer

ation; American Forestry Society; American Association for the Advancement of Agricultural Science; Ohio State Horticultural Society; Ohio State Forestry Society; Columbus Horticultural Society; and the honorary society of Sigma Xi. In many of these he has held the highest offices.

Under his direction the department of forestry grew from a mere beginning in which the subject of forestry comprised only a small part of the botany course until a full 4-year course including 21 semester courses was offered. In arranging the courses in the department Professor Lazenby had two distinct purposes in view, first to prepare those who intended to make forestry their life work; and second to give instruction to those who desire to acquaint themselves with certain branches of the subject but do not intend to become professional foresters.

In his work at Ohio State he has shown himself to be a consistent worker. The sympathy that he held out to his students both inside and outside the classroom was a factor in his success. Always ready, willing and interested in the students welfare, he proved himself to be an efficient and a capable teacher.

"The best help, the best education," he has said "is personal in character. Forestry is one of the youngest of arts and cannot be well taught to large groups or large classes where it is not readily assimilated. What the department of forestry is trying to develop is the spirit that will aid as far as possi-

ble the individual man on his own farm, to help him with his woodlot, and to improve the conditions of the home."

In a tribute to his memory "Doe" Waddell in the Columbus Dispatch said "Prof. W. R. Lazenby is dead, has paid all earthly debt, entered into the silence of the tomb, and passed on beyond us and this vale between the peaks of two eternities. And all parts of the world mourn for him. He traveled far, and touched shores in all directions. The foliage, the growth, the buds and blossoms of every land were valuable acquaintances of his, and from the roots, the petals and the leaves he gathered lessons that will live and give to minds and hearts yet unborn the sunshine and fragrance of learning.

Professor Lazenby was the most kindly, most tender, most American educator I ever knew. Thousands join with me in this blessed tribute for at all points of the compass are those whom he taught and instructed, and who knew him as myself. To each and all, to pupil, relative, brother and to friend, to little children everywhere, who loved his stories of violets, daisies and hyacinths, of clover hay and locust trees, he'll be remembered as the sweet professor of the commonplace. Possessed a dignity that bore the touch of kindness. He was an intellectual giant in the realm of his professorship. Not rich in this world's goods, but exceptionally wealthy in honor, fraternity and true citizenship."

--[The Editor.]

**Who knows what bright October suns
May light up distant valleys mild;
Where, as our pathway downward runs,
We see joy meet us as a child.**

WHY ARE WE TURNING ATTENTION TO AGRICULTURE?

Problems Confronting the Farmer in Supplying Food for the Nation

PROF. G. I. CHRISTIE, Director Agricultural Extension, Purdue University

THERE is some question in the minds of many people in this country as to why we are turning such unanimous and universal attention to the subject of agriculture. When you come to study the problem a little and when you come to see it in its several phases, it is readily understood.

The population of this country has been doubling practically every 25 years. It is increasing now at the rate of about 2,000,000 souls annually. To feed these 2,000,000 hungry mouths requires about, 75,000,000 bushels of cereal producing foodstuffs. A few years ago when the population increased as it did and we knew that we must have more wheat, more corn and more meat, it was easy to take up a new state. So our population went westward, taking up in turn Illinois, Iowa, Minnesota and other states until today we have reached the limit of our agricultural lands. There is no more free land to be had, no more new territory to take up.

We are told by government officials that if we take in all the land that may be irrigated, all the land in the South that some day may be drained, and bring it all under cultivation, we have less than 750,000 square miles of additional land for agricultural purposes. Last year alone, 35,000 square miles of that land was taken up, so it will be

only a short time until all the land is brought under the plow. One of our statesmen who has given considerable thought to the subject predicts that if our present rate of increase in population continues, we will have 150,000,000 people by the year 1950. The great question in the minds of our people today is, How are we going to feed them?

No Surplus of Food.

We take supply and demand as indicative of prices.

When we think of the prices of foodstuffs that exist in the year 1916, we wonder if the supply of foodstuffs and consumption are not about together. When you know that the average working-man is not able to get his three meals at a price he can afford to pay, you wonder if we are not about consuming all that is produced. Referring to statistics, it is found that in 1906 there was ex-



Prof. G. I. Christie

ported from this country 584,239 head of beef cattle and in 1914 only 18,376; in 1906 we exported 1,464,960,356 pounds of pork, after feeding our own people, while in 1914 there was exported only 921,913,029 pounds.

In 1906 we exported 119,893,833 bushels of corn, while in 1914 we exported only 10,725,819 bushels, and then went down to Argentina and brought in quantities of corn for our glucose factories and other purposes, which neutralized what we exported. I

know that the records will show that the increase in exports for 1915 are materially higher than 1914. While they were a little higher and showed up considerably more than the previous year, it was because of the great demand, because of the great need in foreign lands and because of the great prices received. At the same time we sent to bed every night thousands upon thousands of hungry boys and girls, men and women, in our own cities in the United States because they could not pay the price of food. That is the condition we have today.

Why Prices Are High.

Some people ask why is it that in 1916 we should find such high prices. They say, "Why, the world never knew such high prices before." The world never before knew the cheap bread and cheap prices we have had in the past few years. Go back to the days of Rome and Justinian, and we find that he secured a law calling for the people to go back to the land, because he saw that Rome was going down with the decrease in the production of wheat. Coming down to a later time, the Emperor Augustus issued an edict that the people should go back to the farms. We find that notwithstanding all the edicts and laws and all the force that they tried to use, the people continued to leave the country and flock to the city, and as they did the yield of wheat went down and down until it reached four bushels per acre, and then Rome fell.

Even in the United States, back in the days of George Washington, you will find in his last message to Congress he urged this body to appropriate a sum of money to aid farmers in holding exhibits and competitions and caring for their soil in a better way, because he found the yield diminishing

and they were not able to feed themselves. They had the same problems then that we have today. In the years following, railroads were built opening up Illinois, Indiana, Kansas—the great garden of the Middle West, securing a bounteous supply of corn. Prices dropped, as you remember, until corn sold for six, eight and eleven cents a bushel; prices were so low that men burned their corn because it didn't pay to ship it to the market. That day has passed; production and consumption are beginning now to equalize with the result that high prices are here and here to stay. The day has come when we have to work to get the increase in food supply to meet the increased demand of an increasing population.

Many years ago this great need was recognized. In 1887 Congress passed a law appropriating money for an experiment station in every State and territory in the Union. These stations have in that time gathered together some fundamental information which can be used for the benefit of agriculture and country life.

Up in northern Indiana there is a tract of land known as the muck area. Our Experiment Station was appealed to for aid. Men were sent to investigate. Now they find that on all land three elements are needed for plant growth, plenty of phosphoric acid, plenty of potash and plenty of nitrogen. A lot of other things are needed but usually they are present in sufficient quantity to take care of the needs of the crops. When the chemist analyzed this muck soil, he found a weak link—potash was missing. In an experiment the Station men put on about three hundred pounds of muriate of potash per acre, and in the four years that the experiment was running, they harvested 96 bushels more of corn where

the land had been treated than where it had not been treated. You can see what it meant to the farmers to have this information. In the soils of the southern part of Indiana it was found that another element was lacking—phosphorus. When an application of phosphoric acid was made it was found that the yield of wheat which was running about 6, 7 and 8 bushels per acre, was soon turned into a yield of 14, 16, 18 and 20 bushels per acre.

Possible to Increase Yield.

The average yield of wheat in the United States for the past 10 years was 14.8 bushels per acre. A few years ago the yield of wheat in England and Germany was really lower than that now found in the United States. Thru fertilization and a better crop system these countries have been able gradually to increase the average yield of the wheat crop until at this time it ranges about 36 bushels per acre. On the farm of Purdue University, where conditions are similar to those of a large area of wheat lands, thru a good rotation of crops and proper fertilization the average yield of wheat for the past 30 years has reached 28 bushels per acre. These with many other examples clearly demonstrate that it is possible to increase materially the yield of wheat thruout the country. Again, the importance of securing an increased yield is readily recognized. An increase of 5 bushels per acre on the 60,000,000 acres of wheat now grown in the United States would result at one dollar per bushel in an increased wealth of \$300,000,000, and at the same time do much to meet the demand for bread.

In states of the central West, corn is "King of Crops" and yet the average yield per acre for the past 10 years was only 31.5 bushels. Good lands in

all of these states have yielded 60, 70 and 80 bushels per acre. To lower the average yield of corn to 31.5 bushels, thousands of farms have yielded far less than 30 bushels per acre, which makes the crop most unprofitable.

To bring before corn growers the fact that the yield of corn can be materially and profitably increased, demonstration work was started in Indiana, where conditions are similar to those in the Corn Belt. Two hundred and thirty-eight farmers each grew 5 acres of corn with a view of demonstrating the amount of corn which could be produced. Notwithstanding the drouth and other unfavorable conditions, 21 of these farmers were able to grow more than 100 bushels per acre. This yield was far above the average of the crop on the several farms on which the plots were grown and more than double the average yield of the counties in which the crops were produced. The average of the 238 contestants was 72.4 bushels per acre or just about twice the average of the state. When it is remembered that the United States grows annually nearly 106,000,000 acres of corn it is readily appreciated that an increase of 5 to 10 bushels per acre means much to the increased wealth of the country.

Farm Must Pay.

Not only are the results of this experimental and demonstrational work of value in proving that larger production at a reasonable cost may be expected from the farms, but they prove that the farm can be made to pay. In this day, when large commercial enterprises are springing up in every center and are demanding the strongest and best men the country produces, and are, in turn, willing to give a large remuneration for the services of these men, we find that large numbers of the bright young people are

leaving the farm for industrial and professional life. It is, perhaps, not desirable that all people born on the farms shall remain on the farm. It is, however, absolutely necessary if the farms are to be kept in a high state of productivity and made to produce enough to meet the demands of the people of the country, that a fair share of our capable boys and girls shall remain to direct the activities of the farm and the farm home. While the farm offers many advantages in the way of independence and healthful surroundings yet the dollar is doing much in deciding the location and vocation of our young people. It is evident, then, under existing conditions, that, if these young men and women are to stay in the country, the farm must be made to yield a reasonable net financial return.

However, there is a man that we can not help directly thru the schools, and that is the man behind the plow, the man that must produce the three meals a day, the man that must keep the wheels moving—the farmer himself. Provision has been made for a county agent, a man who will take this information on cattle feeding, hog feeding soils and other subjects and sit down with the farmer and figure out his local problems and help him as best he can.

County Agent Work Valuable.

One Indiana county agent was called to advise a farmer on sowing eighty acres of thin land to wheat. Since the land was very poor and undrained and the season late the agent advised the sowing of crimson clover (an entirely new crop to that section) instead of wheat. The farmer compromised, sowing forty acres in clover and forty acres in wheat. The wheat badly winter killed and was plowed up this spring and planted in corn. Due to wet weather the corn was not planted until

after June 15th, which does not insure a maximum crop. On the other hand the farmer has already harvested \$1000 worth of clover seed from the forty acres sown to this crop. While this individual farmer benefited in a large financial way from the advice of the agent, the whole community will be benefited and the increased wealth to the county will be many times greater than the agent's salary.

Another agent organized the farmers of one township to eradicate hog cholera, a disease which has caused Indiana farmers a loss of many millions of dollars. In 1914, before the organization was formed, the farms of the township had 3,001 hogs, 526 were vaccinated and 357 died, meaning a direct loss of approximately \$3,570. In 1915, after an organization of all the farmers had been effected and a study made of hog production and prevention of cholera, the farms of the township produced 4075 hogs, of which number 486 were vaccinated and 150 died—a direct loss from cholera of approximately \$1500. In this township alone, with practically the same number of brood sows, the number of pigs produced was increased by more than 1000, while the loss from cholera was reduced to the extent of \$2070. Surely the work of the agent would be counted a large financial gain to the farmers and to the county.

Farming a Business.

A short time ago I visited some merchants and asked, "What is the capital invested in your business in this town?" They told me, one after another, what they thought it was. When I put it all together the average capital invested in the average business in towns over the State was less than \$8000. Here are business men with their corps of trained workmen and bookkeepers and

everything on a business basis. On the other hand, study the farms. There is invested twenty, forty and eighty thousand dollars. Two farms were investigated a short time ago, and are called farm A and farm B. Farm A contains 274 acres and farm B 263 acres. Both farms are in the same community. Farm A is valued at \$41,000 and farm B at \$46,025. The total income from everything sold off of farm A in the year 1915 was valued at \$2,816. The total income from everything sold off of farm B in 1915 was \$7,549. Now we said to farmer A: "As a business proposition, you ought to allow yourself 5 per cent interest on your investment, because if you did not have this money invested here, you would put it in gravel-road bonds or some other business." We allowed him 5 per cent interest on the \$41,000 and what did he have? Why, he would have had to go over to his wife's relatives to borrow \$982 to pay himself 5 per cent interest. He could have better taken that money and put it into gravel-road bonds and driven a grocery wagon at a dollar a day. On the other hand, farm B paid 5 per cent interest on the investment of \$46,025 and the owner had left for himself, for his services as manager of that farm, \$2,815.

Make Farm Work Easier.

Going down the road one day last fall, I came by a beautiful blue grass pasture. The grass was standing almost knee-high, and in that pasture was a herd of short-horn cattle. I said to myself, "There is a man who is making money." As I went along the road towards the house and up towards the end of the pasture I saw a large cement tank. The farmer had a pipe from the tank to the well and a gasoline engine that pumped the water and filled the tank. The cattle waxed fat and made

that man money. As I stopped to get a picture of this outfit, from the house came a gray-haired woman with a pail on her arm. She trudged her way 100 yards or more to the well, where there was an old barrel with a top which she lifted, filled her pail with water and trudged back again to the house. Then I said, "I don't think as much of that man as I did before."

This is the trouble; farmers have been so busy on their farms making money, buying lands, paying off the mortgages, getting hold of property, buying binders, buying pure-bred stock and other good things that will help do the work a little easier, that they have forgotten about the soul in the house who is willing to sacrifice, willing to get along with almost nothing, in order that they might have a home and own the farm. How easy it is to install a water-supply system so that the women can save time and energy and live as women should live on the farm. We are coming to that. Modern homes are found in every community.

Cooperation Necessary.

People should get together and determine that they will work for the betterment of the country, that they will spend their money and their time for country institutions. This movement is under way, there is a big opportunity at this time to go out and encourage the farmers to work not only to get more bushels of corn and to pay the mortgage off the farm, but to work to build up the community, to build good roads which will eliminate distance between the town and the country, to build good schools and good churches, build good homes and spend a fair share for the education of the boys and girls and for the social life which will develop men and women and make this nation the greatest on earth.

USING LIME ON SOILS IN OHIO

Results of Experimentation Show Its Need in Eastern Part of State

CHAS. E. THORNE, Director, Ohio Agricultural Experiment Station

WEST of a line drawn thru Ohio from Sandusky thru Columbus to the west line of Scioto County the rocks nearest the surface are limestone, except in Williams and parts of Defiance and Fulton counties, while east of that line the soil lies upon sandstones or shales except in comparatively small areas in the coal measures. North of

this soil origin is that as a general rule the soils of eastern Ohio were much less liberally stocked with lime than those of the western half of the State.

In the earlier agriculture of the State no deficiency of lime was observed, as the supply left in all parts after the clearing away of the forest was sufficient for many crops of corn



Yields of Clover on Unlimed and Limed Land Receiving No Fertilizer

an irregular line reaching from Columbiana to Brown counties the soil has been modified by glacial action, while south of this line it has been formed by the decomposition of the underlying rocks, excepting the flood plains of the river valleys. The glaciated soils, however, do not differ largely from the residual soils, as the course of the glaciers was in a general way from north to south and much of their detritus is made up from the rocks over which they traveled. The outcome of

and wheat. However, the end of the first century of our agriculture found this supply becoming deficient in eastern Ohio, as manifested by the frequent failure of the clover crop and the growth of sorrel in its place.

In 1900 the Experiment Station began the use of lime in Wayne County, and in 1904 on an old field in Montgomery County. The result has been an immediate and large response to this treatment in Wayne County, while on the Montgomery County land most

crops have been quite indifferent to lime, alfalfa being the only crop that has really shown a decided preference for the limed land until very recent years.

At the Miami County experiment farm, experiments in the use of ground limestone have been in progress for 5 years, the limestone being applied to corn or tobacco in 3 different rotations. The average outcome has been an apparent gain for lime of .70 bushels of corn per acre in 16 comparisons, of 1.33

brought under the plow until comparatively recent date because of the expense involved in draining it. This particular farm has probably not been under cultivation more than 25 or 30 years and its soil is found to be well stocked with lime. On this land the application of waste lime from the sugar factory has decreased the yield of every crop.

In western Ohio, therefore, the farmer should experiment with lime in a small way, by liming a strip across his



Yields of Clover on Unlimed and Limed Land Receiving Barnyard Manure

bushels of oats in 10 comparisons, of 3.52 bushels of wheat in 7 comparisons and of 160 pounds of clover hay in 6 comparisons. These increases would approximately cover the cost of the liming, but the relatively large increase of wheat leads to the doubt whether part of the increase in that crop may not be due to soil variation rather than to the liming.

The Paulding County experiment farm is located on a tract of flat, black land which occupies large areas in northwestern Ohio, and which was not

fields and carefully observing the effect on subsequent crops, especially the clover crop, before beginning the general use of lime, while the eastern Ohio farmer may generally assume that liming would be profitable. In both sections it should be remembered that lime does not take the place of any other fertilizing elements, and where the land needs phosphorus or potassium that need cannot be met by the use of lime, notwithstanding the theory that lime makes potassium available.

On the Wayne County land, on which

the Experiment Station is located 2 tons of ground limestone, applied to the surface and harrowed in after plowing the land for corn, in a 5-year rotation of corn, oats, wheat, clover and timothy, has increased the yields of corn and of grain and hay in the subsequent crops by the following amounts per acre as shown in the table.

rotations is essential to the greatest economy of crop production in Ohio, and clover cannot be successfully grown on an acid soil. For this reason potato land should be regularly limed. If the lime is applied after the potatoes are harvested it will not be likely to injure the future crop. It should be remembered, moreover, that

INCREASES DUE TO LIMING THE LAND.

FERTILIZERS.	Average Gain Per Acre for Lime.*				
	Corn 12 yrs.	Oats 10 yrs.	Wheat 8 yrs.	Clover 11 yrs.	Timothy 7 yrs.
None	Bus. 8.25	Bus. 2.72	Bus. 2.37	Lbs. 574	Lbs. 713
Acid phosphate only.....	7.51	2.87	3.29	696	942
Complete fertilizer, nitrogen in nitrate of soda.....	6.07	.64**	1.34	872	1,139
Complete fertilizer, nitrogen in oil-meal, dried blood or sulphate ammonia	11.19	2.48	3.74	1,342	1,481
Yard manure.....	7.76	2.54	2.90	960	1,243

*During the past 3 years of the test the yields of the oats, wheat and timothy were not separately ascertained for the limed and unlimed land. **Decrease.

The results shown in the table may be accepted as a conservative indication of the probable need of lime throughout much of northeastern Ohio, for these comparisons show the gain for systematic liming on land a part of which had one dressing of lime during the period of the test. On the parts of this land which has never had any lime the gain for lime is much greater than that shown in the table.

Potatoes do not suffer from a slightly acid soil, and are supposed to be somewhat less liable to scab on such a soil, but the growing of clover in systematic

lime will not produce scab unless the infection already existed in soil or seed.

The table shows that the corn crop has been one of the most responsive to liming, the corn at one end of the rotation and the clover and timothy at the other showing the largest increase. The thorough mixing of the limestone with the soil consequent upon the cultivation given to the corn crop and the plowing for the oats and wheat has left the soil in the best possible condition for the clover roots to find a particle of lime in contact with every particle of soil.

OHIO FRUIT GROWERS HAVE MARKET ADVANTAGES

Few States Have So Many Thriving Cities, Towns and Villages

WENDELL PADDOCK, Ohio State University

FRUIT growers in Ohio have advantages in marketing that growers in many other states do not enjoy. But few states have so many thriving cities, towns and villages, and the urban population is constantly growing. Ohio now has five cities with a total population of 1,392,839; three with a population of from 50,000 to 100,000; six

Then again, but few states are so well provided with means of transportation as numerous railway and inter-urban lines bisect the state, improved wagon roads are common and water transportation is provided by the Ohio river on the South and by Lake Erie on the North.

Here then we have numerous mar-



Fruit Should Be Handled Carefully

with a population of from 10,000 to 25,000; forty-five with a population of from 5,000 to 10,000, and in addition there are numerous towns and villages. That these people are busy is shown by the fact that the manufactured products have reached a value of \$1,437,925,878. Practically all of this population is non-productive of food stuffs and so must be provided for by the farms of the country.

kets of the best type and the facilities for reaching them. If developed to their capacity, it is likely that but few of our fruits would need to be marketed outside of the state. As it is many carloads of outside grown fruit are brought in to the state and much of the product of our own orchards is sent to distant points.

One of the surest ways to increase the demand for fruit is to improve the

quality. Consumers soon become disgusted if they find many wormy, diseased, partially decayed, and undersized fruits in their purchases. After one or two experiences of this kind the customer is likely to turn his attention to tropical fruits where honest values are usually to be had. The situation is about the same as with eggs; after a few spoiled eggs have been brought into the house their use for a time is reduced to a minimum.

Now and then a man is found who is successful with the local market, and the basis of these successes is invariably superior fruit, honestly and attractively packed. The man who has the courage to grade his fruit severely and who also understands the art of packing soon builds a reputation that draws trade. It is not uncommon to find a string of automobiles calling at such places for fruit, and in some instances entire crops are disposed of in this way.

In a few sections of the State the acreage is so large that large shipments must be made. In such cases system in marketing is usually well developed, but in other instances, isolation often makes local marketing on an extensive scale impossible. It is in such places that the greatest care should be taken in the growing, grading, and packing. It is in such localities that low prices often prevail, consequently it would ap-

pear that there is small incentive for the grower to give his fruit more than ordinary attention. However, the reverse is true as has been often demonstrated. Only recently a member of the extension department graded and packed a trial shipment of peaches in a community where but little attention had been given to these things. When the package reached the dealer a decided advance in price was readily given and a steady market assured for all fruit of quality that was packed equally well.

Fancy packages have not been found to be adapted to Ohio conditions, but fancy fruit is always in demand. The barrel and the bushel basket, ungainly though they are, if clean and strong, are usually all that is required for apples and peaches. But the kind of fruit with which they are filled makes all the difference in the world. It would seem to be an easy matter to fill a barrel with a lot of apples which are uniform in size, in shape and color and which are free from blemishes. But in reality this will be found to be very difficult and in many orchards, but few fruits answering this description can be found. When the practice of furnishing high grade fruit, honestly packed, becomes universal much fruit that now clutters our markets will either not be grown or else used in other ways.



ACTIVITIES OF THE U. S. BUREAU OF SOILS

Soil Survey, Fertilizer Investigations and Research Work Carried On

MILTON WHITNEY, Chief

THE activities of the Bureau of soils of the U. S. Department of Agriculture consists of the soil survey, fertilizer investigations, and studies in soil physics and soil chemistry. All the employees of the Bureau, except the clerical force, are trained men, specializing in certain branches of scientific agriculture.

The soil survey takes up the classifying and mapping of the soils of the country. Fifty-five to 60 men who are classed as "scientists in soil survey" are employed in this work. In addition, the Chief of the soil survey, assisted by five inspectors, supervises the work in different sections of the country. When an area which is usually a county is to be surveyed, the work is assigned to a field man with one or more assistants. They commence the survey upon the completion of other work. In this way several surveys are kept in progress. Many states cooperate with the Bureau in carrying on soil survey work, and furnish men to assist the field parties.

The average soil survey requires about 5 or 6 months, and the work is planned that areas in the southern part of the country are surveyed during the winter and areas in the northern part during the summer months. Where satisfactory topographic sheets or county maps are not available, it is necessary to make a plane-table traverse survey. The field man is equipped with a compass, an odometer for measuring distances, a soil auger to take samples, and generally with a plane-table to correct or construct a base map.

In mapping the soils the men drive

along roads, going into fields for distances of upwards of one-half mile, depending on the character of the country and the location of the other roads, and make frequent borings. They examine the soil material as encountered at various depths, noting the texture, color and structure, the presence of coarse material, the drainage, and the character of the crops or native vegetation. The soil type is then indicated on the field sheets, from which the soil map is later constructed, according to the nomenclature used by the Bureau of Soils. When, as the work proceeds, a change is noted in the material sufficient to cause it to be classed as another soil type, the boundary between the two types is traced, and shown on the map. The character of the vegetation and the physiography frequently are aids in distinguishing between soil types. While in the area the field party makes a study of the local climatic conditions, the geology and the agriculture of the region. After the work is completed a report is prepared for publication in connection with the soil map, giving a general description of the area, a discussion of the agricultural and climatic conditions, and a detailed description of each soil type mapped.

In the detailed type description the color, texture, and structure of the soil and subsoil are described, with other features, such as the substrata. The extent, importance, topography and drainage of the type is given, and their relation to agriculture, including the type of farming practiced, the crops grown and their yields, and the general methods followed are treated.

Means of improving, utilizing and treating the type are discussed. In addition, the report deals with special conditions affecting the area surveyed as irrigation and drainage.

In detailed soil surveys, the maps are generally made on the scale of one mile to the inch, and in taking samples, borings are made to a depth of 3 feet in the eastern surveys and to 6 feet in the west. Reconnaissance surveys of larger areas are sometimes made, the

dition, the surveys also form a basis for the investigation of other agricultural workers thruout the country.

Fertilizer Investigations.

The work of the Bureau in the investigation of fertilizer resources, is done mainly in the laboratories of the Bureau, and its object is to determine sources of supply of the fertilizer ingredients, phosphorus, nitrogen, and potash. The search for fertilizer sources is stimulated at present by the



Field Man Making the Survey

maps are constructed on the scale of 4 to 6 miles to the inch. Occasionally the Bureau undertakes special lines of work, and soil survey men are assigned to such work as making a special study of peculiar soil conditions or particular classes of soils, such as truck soils and fruit soils, or assisting the reclamation service in locating some of their important projects of the forest service in classifying agricultural lands. The soil survey has reached all parts of the United States, and as far as Alaska, Porto Rico and the Philippines. In ad-

scarcity of potash and the high prices of phosphate and nitrogen materials. When a material is suggested as a possible source of supply, chemical analyses of samples are made to determine its fertilizer value. Work is carried on along the lines of fixation of atmospheric nitrogen, volatilization of phosphoric acid, recovery of potash from mineral sources, such as alunite, natural brines, flue dust from cement mills and blast furnaces, and from other natural sources, such as the giant kelps.

The Bureau keeps in touch with the development of the industry of extracting potash from giant kelps on the Pacific Coast, and plans have been made for the establishment of a government experiment and demonstration factory, and in cooperation with the Bureau of Fisheries experiments are to be made in transplanting kelp plants along the Atlantic Coast, to afford a source of potash near the large fertilizer markets. The possibility of ex-

may profitably produce potash as a by-product and various methods have been worked out for treating alunite for potash.

The fixation of atmospheric nitrogen is receiving considerable attention. An electrical furnace is in operation, working on the problem of volatilizing phosphoric acid and fixing nitrogen in one operation, and apparatus has been installed for experimenting with the Ostwald process of oxidizing ammonia for



Taking the Soil Sample

tracting potash from feldspar and other silicates, as a by-product of cement mills and blast furnaces, is being called to the attention of manufacturers. Where analyses of samples of the flue dust show a sufficient potash content, now volatilized and lost, to warrant an expenditure for apparatus to recover it, the company is advised of the possibility of profitably installing such apparatus. The extraction of potash from wool scourings is being investigated, to determine whether companies engaged in cleaning raw wool

the production of nitric acid. Apparatus and processes for rendering garbage and other wastes for use as fertilizer for their nitrogen content have also been devised, and some work is being done in determining the availability of various nitrogenous fertilizer materials when applied to the soil.

An electric furnace is operated for volatilizing phosphoric acid from phosphate rock. In connection with this work the possibility of economically collecting phosphoric acid by means of the Cottrell precipitator, instead of

passing the fumes through absorption towers, has been worked out. Experiments are conducted to determine the fertilizer value of raw phosphate rock. The problem of extracting phosphate from the extensive beds of the rock in the West, so as to make it economically available to the large fertilizer markets in the East, is being studied, and is found to depend largely on the possibility of securing cheap water near the deposits.

Soil Physics and Chemistry.

Research work in soil physics is directed toward an investigation of the textural relation of soils to their mechanical composition, to determine the relationship between the texture and structure and soil productiveness. This involves a study of the arrangement of soil particles, flocculation and sedimentation. Soil temperature or heat relations are studied to determine heat conductivity and the thermal relations of the soil to crop production.

Research work in chemistry is carried on along three general lines, (1) chemical analyses of soil samples to aid the soil survey in the classification of soil types, (2) studies of the composition of soil solutions to determine any

consistent differences or similarities between different soil types or soil provinces, and of the relation of the composition of the soil solution to the productive capacity of the soil, and (3) investigations of the relation of the inorganic chemical composition of plants to the composition of the soil, special attention being given to the presence and relative quantities of the rarer elements in plant ash. Considerable attention is given to the microscopic mineralogical examination of soils. The larger soil separates have been exhaustively studied, and satisfactory methods have been worked out; the finer silts and clays, however, furnish a field for further research.

The routine work consists of the examination and analysis of soil samples to aid in identifying the soils and to determine reasons for unproductiveness. Chemical examinations of irrigation water, of alkali crusts, and of materials of possible fertilizer value, are made.

All the results of the work done by the Bureau are published in bulletins and scientific papers and circulars of the Department of Agriculture.



CONFIDENCE NEEDED FOR ECONOMY IN RURAL WORK

It Makes for Effective Cooperation and Neighborhood Pride

THOMAS N. CARVER, Harvard University

ONE of the great factors in the economy of effort, otherwise called the saving of labor, is confidence. Its greatest value is not found in the stability which confidence brings to the financial market, but is more important in its effect upon the foundations of the economic structure of which the financial market is the apex. Nor is its greatest value found in the unshackling of enterprise which results from confidence in the government, though this is of tremendous importance. So important is this that it is generally conceded by students that a bad system of laws, provided they be enforced with certainty, regularity, and precision, may be better than a good system when enforced with uncertainty, irregularity and lack of precision. In the former case the citizen knows what to expect and can adjust his plans to the situation. In the latter case, he never knows what to expect, nor how to lay his plans. Of course, a combination of a bad system of laws with an irregular and uncertain administration is vastly worse; but the point is that confidence in the regularity and calculability of the government is of the utmost importance.

The average citizen has more points of contact with his fellow citizens than he has with the financial market or even with the government itself, and the sum total of the dealings among individual citizens exceeds, not only in number but also in the sum total of importance, the dealings with the financial market and the government. It is in these multifarious relations between man and man that confidence assumes its greatest importance—where its lack,

results in the greatest waste of effort, or its presence in the greatest economy.

Professor E. A. Ross in his book on "The Changing Chinese" mentions certain parts of China where the owner of a rice field must guard his crop every night to keep it from being stolen. The waste of energy involved in this process must be tremendous. Unless we have at some time been confronted with the same necessity, we can scarcely appreciate how much energy we save in being able to sleep at night in confidence that the products of our labor will not disappear before morning. But before we waste too much sympathy on those Chinese farmers we should consider the position of the fruit grower and the market gardener in the neighborhood of our large towns. Unless one is able to produce on a scale sufficiently large to permit one to hire a watchman, or unless one is favorably situated with respect to police protection, one is at the mercy of town marauders. This injures the town consumers as well as the country producer, because it adds to the cost of growing fruits and vegetables, and the town consumer must share in the cost. The sheep grower has his troubles with the sheep-killing dog, which adds to our cost of living by discouraging sheep husbandry. Until we can create conditions under which every farmer can go to bed at night in confidence that his property will not be stolen or destroyed before morning, we shall not achieve the maximum economy of effort.

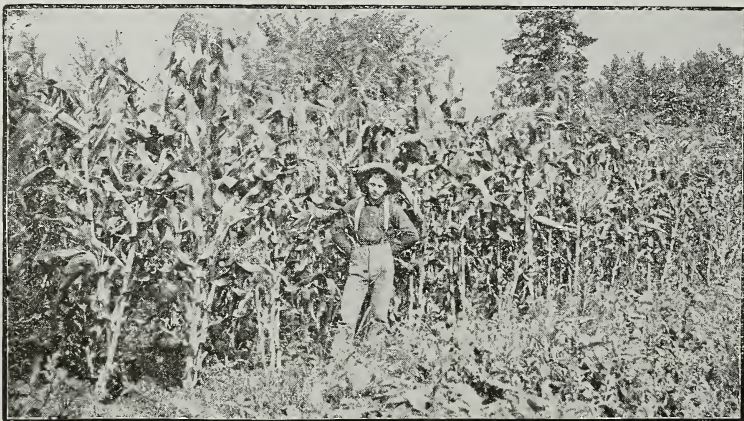
But more important than safety from theft or destruction is the confidence of neighbors in one another which will enable them to work together for their

common good. One of the great hindrances of cooperation is the lack of confidence which neighboring farmers feel in one another. The writer has talked with and to a good many hundred farmers on the subject of cooperation. He has found very few who doubted that it would be a good thing; but when he has tried to find out why they did not cooperate, he has generally found that it was because of a lack of confidence in one form or another. Sometimes this lack of confidence is due merely to a feeling of uncertainty as to just how to begin. We are all afraid of the water until we have been in often enough to feel certain that we know how to swim. This lack of confidence should, perhaps, be called caution, which, up to a certain point, is a good thing. Frequently, however, it is due to a sheer lack of confidence in the integrity or good will of one's neighbors. Where this lack of confidence is justified by such lack of integrity or good will there is need of a moral or religious reform. The reformer who could create integrity, reliability, and good will, where these qualities do not exist, should be ranked with the mechanical inventor or the engineer who devises labor-saving methods. Nothing

could economize labor more effectively than the creation of these moral conditions which would enable the neighborhood to work together rather than at cross purposes.

In some respects, a neighborhood may be likened to a large, complicated machine. If the various parts are not working in harmony but are banging against one another, there is a waste of power and efficiency. In the social organism, the harmonious working of parts is the essence of ~~im~~morality. It is obvious that the cooperative organization of rural communities, so much needed for agricultural efficiency, is not to be created by merely saying "Go to now: let us work together."

There can be no effective cooperation where there is no mutual confidence: there can be no mutual confidence where there is little integrity, reliability, or good will. In a community where every man's word is as good as his bond, where every neighbor can be relied upon to do his part faithfully in the upbuilding of the community, and where there is a neighborhood pride and patriotism and mutual good will among all the neighbors, there will be no difficulty in working together, which is the essence of cooperation.



FARMING WITH MECHANICAL POWER

Tractor Helps Solve Labor Problem During Rush Seasons of Year

GEORGE W. McCUEN, Ohio State University

THE question of farming with mechanical power is being more and more carefully considered by the up-to-date farmer, who is trying to make his farm produce more at a decreased cost of operation. Power farming is no longer an experiment, but it has been tried out by a large number of farmers who have purchased tractors during the past years and have found them to be an economical investment.

The proper size of tractor for the average farm cannot be specifically determined since several factors must be considered such as the size of the farm operations taken care of, belt power required and type of soil to be plowed. When belt power is required for such work as silo filling, at least a 10-20 or 12-25 tractor should be used in order to maintain the proper speed of the cutter. A smaller tractor can be used,



Plowing With a Tractor

At first the tractor was used chiefly for plowing. This was not a paying proposition, and the manufacturers have attempted to design a tractor which would be universal in its use—one adapted to plowing, disking, harrowing, seeding, harvesting, etc., and to take the place of a number of horses on the farm. Such tractors have met with remarkable success. The small tractor was introduced just at a time when the question of farm labor was becoming a serious problem, and it has been a great help as a partial solution to the problem.

but the danger of overloading the engine is much greater. The 10-20 or 12-25 can pull 3 or 4 14-inch bottom plows according to the depth and type of soil plowed.

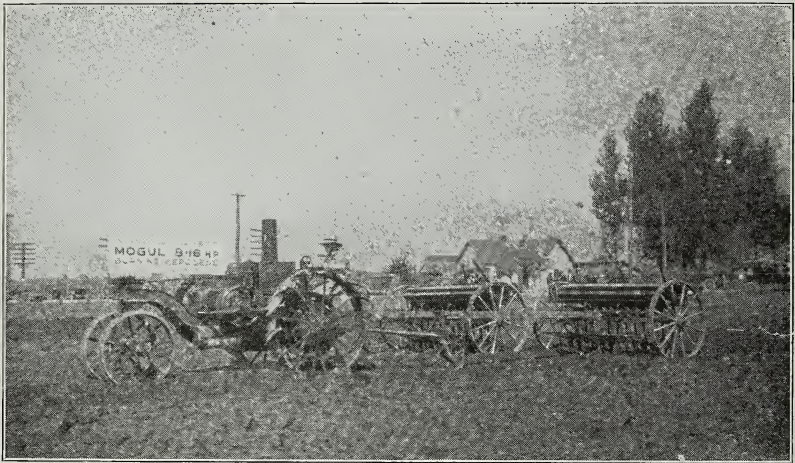
There are about 170 different makes of tractors on the market and in trying to select the machine best adapted for his work one may become somewhat bewildered by the multiplicity of designs. It will be but a short time until the freak machines will be a drug on the market or cease to be manufactured.

Tractors may be classified in two general ways, (1) as to the number and

type of wheels, (2) the type of motor. There are the two, three, and four wheeled, and the track or caterpillar types. Any of the wheeled types which have been carefully built by a reputable manufacturer will give good service when used on soil that is comparatively well drained and no serious injury will result from the packing of the soil. The arrangement of the wheels is not important so long as the tractor is hitched as nearly as possible to the center line of draft of the implement. Some tractors have one of the drive wheels running in the furrow and great claims are

of soil, and especially well to wet or sandy soils. They do not pack the seed-bed to any extent because of the large track surface in contact with the earth. These tractors are necessarily more expensive to manufacture and the additional price asked is often looked upon by the prospective buyer as exorbitant.

The power plant or motor of a tractor is of two general types, high and low speed motors. The first mentioned type is generally the upright motor and is well adapted for burning gasoline. It will burn kerosene if the fuel is properly carbureted, otherwise the heavier



Tractor Hitched to Grain Drill

made as to the good results obtained by subsoiling the bottom of the furrow with wheel lugs or spikes. No data has yet been obtained to prove or disprove the claim. The one drive wheel tractor, which wheel travels on the unplowed ground, does not have the differential gear, which is necessary on the other types to divide the power on the drivers while turning corners. This design has been quite successful in the field. Such tractors weigh from 2800 to 5500 pounds.

The track type or the caterpillar type adapt themselves very well to all types

parts of the kerosene will not be vaporized and burned but will work past the pistons into the oil reservoirs and cut the oil, injuring its lubricating qualities. This difficulty may be overcome by using a mechanical oiler, which forces fresh oil into the cylinder and bearings, insuring proper lubrication at all times.

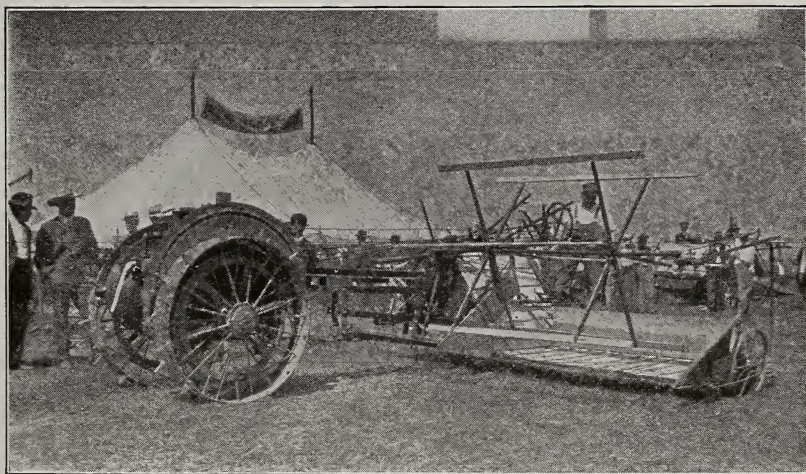
The low speed motor is generally of the horizontal type having either single, double, or four cylinders. The last two mentioned may be opposed or twin, that is, side by side. This type of motor burns gasoline or kerosene

equally well, the heavier parts of the fuel, if they are not vaporized and burned, pass out with the exhaust gases. The valves being located in the head facilitate this.

Either the high or the low speed motor when built by a reputable firm and operated according to their instructions will give good service.

The tractor which would be best adapted to average farm conditions can be bought for \$750 to \$1000, and the horse supplanted would pay for more than half that amount. A farmer ordinarily requires some belt power for grinding, ensilage cutting and sawing wood. The tractor could be made to serve a dual purpose, doing the above work and taking care of the heavy work during the rush seasons of spring, harvesting, and fall plowing and seeding. The speed of the tractor can be

maintained at the minimum and no time lost at the ends which is allowed for resting the horses. An average of 7 to 10 miles more is covered each day when plowing with the tractor than with horses. Late springs and hot harvest seasons are not such terrors when a man can rely on his tractor to work early and late for him getting his crops in on time and saving the grain from crinkling and shelling out. The adapting of the tractor to farm conditions rests with the individual as each farm is a problem in itself. The increase in the value of land has caused the modern farmer to consider methods of farming which will reduce the cost of production. The tractor, together with the ingenuity of the farmer and his method of crop rotation, has helped to solve the problem.



Tractor Drawing Grain Binder

LABOR INCOME DOES NOT DETERMINE TRUE PROFITS

It Does Not Consider What the Farm Contributes to Family Living

JOHN I. FALCONER, Ohio State University

STATEMENTS are rife concerning the profits in agriculture. On the one hand enthusiasts have tended to single out instances of exceptionally high profits made by farmers and to hold these up as examples of what might be expected by a man of average intelligence and experience in operating a farm. Others, taking a different view, have pointed out the poor financial return which the farmer supposedly receives when compared with the wages and profits received by the men employed in the city.

It has been said that the wages and profits received by farmers as a whole, in the United States, would average not over four hundred dollars per year. But as yet few if any studies have been made for the purpose of securing the true income of farmers, such as would serve as an equitable basis upon which to levy an income tax or which one might compare to the income of the man living in the city and the man living on the land. These statements concerning the income of farmers have largely been made, in recent years, upon the basis of figures secured in farm management investigational work, the purpose of which investigations have been made to determine the relative profitableness of different types of farming and of different farm practices in a given community. To express the relative profitableness of the different types and practices the term labor-income has been generally used.

The labor income of a farm is computed by subtracting the total farm expenses, including depreciation and interest, from the total receipts for

the year. Any increase or decrease in inventory due to increase in stock or equipment being reckoned as a receipt or expense. Interest upon the capital invested is subtracted because this portion of the income represents the returns to capital. Labor income is a fair basis upon which to compare one farm with another, but it does not afford a fair basis for comparison between the profits of farming and those in other occupations. It is a good basis upon which to compare two farms in a community one operated, for example, as a grain farm, the other operated as a livestock farm, or with which to compare a corn and hog farm with a dairy farm. But it is not a measure of the profits in agriculture nor would the average labor income of a farm for a series of years be a criterion of the size of the estate which a farmer would probate at the time of his decease.

In the first place it fails to credit the farm with what it contributes towards the family living. Farming is so closely related to the home and the family as a whole, that it is difficult to separate the farm business from the home as clearly as can be done in other occupations. On the farm the wife and children do a certain amount of farm work, which makes farming more of a family enterprise. Again, the farm furnishes certain things for the family living—things which must be purchased by the family living in the city—such as house rent, fuel, milk, eggs, and vegetables. These items, while not of great importance in comparing one farm with another, must be taken into consideration when figuring the profits of the

farm business or when comparing the wages and profits of farmers with those of men in other occupations.

The indirect income from the farm is often underestimated by the farmer, or merely taken for granted, and its true value not appreciated. The person who lives in the city must spend a portion of his income for those things which the farmer receives without any cash outlay. It is what the farm furnishes directly towards the living expenses of his family which enables the farmer to get along even tho his crops are poor or the loss on his livestock eats up his profits. Food and shelter are important requisites of life, and a large portion of these necessities are furnished by the farm. The labor income, therefore, is not the limiting factor in determining how much the farmer shall have to eat.

To determine the value of the products furnished in Ohio by the farm to the family a study was made of 44 farms in Champaign county. The figures were secured by driving along a road and visiting every farmhouse. In most instances the data secured were estimates, but in view of the fact that similar investigations in other states have arrived at approximately the same figures, it would seem that the data was fairly accurate. A summary of what the farm contributes to the family, as found on the 44 farms, is given in the table below.

Food	\$248.28
Fuel	30.50
House rent	172.00
Total	\$450.78

This shows a total of \$450.78 contributed by the farm to the family, or an average of \$110.01 per person, as there was an average of 4.1 persons on the farm. This sum of over \$450 would

have to be added to the labor income of a Champaign county farmer before making comparison with a city man's wages.

Increasing land values is another item which has been a factor in determining the profits in agriculture for the past 2 decades. According to the last federal census rural land values in Ohio increased \$20 per acre during the 10 years from 1900 to 1910. For the different counties of the state this increase ranged from a little less than one dollar per acre to over fifty dollars per acre. But the average for the state would show an increase of two dollars per acre per year, or of \$166 per year for the average Ohio farm. Part of this increase in value was doubtless due to capital and labor invested in the way of tile, fertilizer, lime, etc., but the greater part was due to the general increase in land values. This increase since it has not been due to any inherent merit in the individual farm organization is not taken into consideration in determining labor income. Yet it has been an important factor in determining the profits in agriculture for the land owning farmer during the past fifteen years.

Another reason for the comparatively low returns which have been shown in some communities lies in the method of collecting the data. It has been the usual practice to visit and secure data from all the farms in a given territory. This has frequently resulted in showing a low average return in spite of the fact that some farmers in the territory were receiving an income above \$2,000 per year. In nearly all communities there will be found a few living on the land who are not there for the purpose of making a profit from the land; they are there because the farm furnishes them a home. This is frequently the

situation with elderly men who have been successful farmers, but who while still living on the farm are now living on the profits made in former years. This is found to be especially true in the older settled agricultural regions where land values are low and where taxes on land and other current expenses are not high. There are regions in Ohio where fully one-third of those living on the land are not there with the intention of making a profit from farming. In such a community the av-

erage return would hardly be a measure of the agricultural possibilities. If one were attempting to secure information as to the profitableness of farming these farms would better not be included. Hence it is not wise to attempt to compare the profitableness of agriculture in different regions on the basis of labor income. While the financial returns in agriculture are not high, the true income of a farmer would be considerably above that represented by his labor income.





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COLUMBUS, OHIO, OCTOBER, 1916.

EDITORIAL

Does a college education pay? If one looks just on the financial side of life his conclusion will invariably be that it does not. Bookkeepers must spend considerable

time in school, yet they get no more than a brick layer and often less. College professors may earn \$3500 a year yet they are not making nearly as much as many workers in automobile and munition factories, tho no one will deny that they are more useful to the community and to the world. Yet the college professors have spent a decade or more years in preparing for thir work.

When one may see the uneducated riding in automobiles, while school teachers, college professors and other professional men with a college degree

or two hanging to them have to pinch and scrape to keep themselves alive, he cannot see much encouragement in getting a college training. But is the power of earning money all that there is in life or is it the purpose of the college to train students for that purpose.

However it is not the purpose of a college to make farmers or business men out of every student as it cannot hope to do that. It does, however, help the man who is otherwise fitted for certain work whether it be farming, or some professional work. As has been well said, the college cannot make a farmer anymore than can a whetstone improve the steel in a scythe blade, but it will put an edge on his faculties in the same way that the whetstone will put an edge on good steel. The college

has nothing to offer to the person who comes without a purpose but to the person who comes with the idea of getting something it gives opportunity to make himself better qualified for the work he wishes to pursue. The way he makes use of his faculties when thru college will determine whether it has paid him to obtain a college education.

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Students in the College of Agriculture will have a chance to boost one of the best educational features of the year—**UNIVERSITY APPLE SHOW.** the University Apple Show which will be held in the Horticulture-Forestry Building from December 14 to 16. At that time the third annual Inter-State Apple Judging Contest will be held when judging teams from seven other state agricultural colleges will attempt to wrest the honors from Ohio State's winning trio last year.

The judging contest is a national "fest" in itself while the University Apple Show will be the largest exhibit of home-grown apples in the state this year. The horticultural students have been working since August, besides having plans and projects left over from last year, and nothing will prevent them from having an exhibit of the best line of apples to be seen in the whole state. Let the judgment rest with the oldest apple exhibitors in the state if you doubt it. But proper publicity upon which the successful boosting of the show depends cannot be carried out in a week by a few persons. Every student in the college should consider himself on a committee to make the show a success.

Write your home paper a short story about the Apple Show and mention the judging contest or see that the apple growers of your community know about

the show. Possibly you know of some manufacturer who would want to exhibit his line of horticultural accessories. Give these names to the apple show committee. Above all do not look lightly upon the Apple Show because you are specializing in agricultural engineering or animal husbandry and give excuse to attend "just to get a drink of cider."

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Doing away with the rigid 4-year curriculum and substituting for it the elective system has filled a long felt want in the College of Agriculture. The progress of education is now demanding that the student be trained along lines that will develop in him a broader intellect and a broader vision of the different phases of agriculture in as efficient a manner as possible.

NEW COURSE HAS LIMITATIONS.

Tho the new course is a step forward in the teaching of agriculture at Ohio State it still has its limitations. Besides having the first year uniform for all courses it is also required that the student take at least one semester of work in each of the different departments of the college in addition to a year's work in economics.

This requirement will prevent the student from taking all his work in just one or two departments and will force him to take work in all the departments of the College, but it is one that ought not to be followed too rigidly. It should be remembered that the student is practically a grown man and is or should be realizing his responsibility to his fellow-men. It is true that some start on their college course without any other idea than that they want a college training just for its own sake and for no other reason. For these

people there is little left other than to follow the regular course.

On the other hand there are persons that enter the College with a definite plan of what they want to accomplish. Some of them have had considerable experience in farming, and some have taught in the elementary and high schools of the state. During this time they probably have read and studied along some of the lines that are offered by the different departments in the required course. If these men are required to follow the curriculum there would necessarily be considerable duplication of the work they already have worked out and consequently a wasting of their time as well as that of the instructor. In the case of such students, discretion should be used in making up his course and that he be allowed either to substitute advanced work in that department or work in another department in which he is especially interested. In doing so the time of the student will be spent more efficiently, a greater spirit of initiative will be instilled in him by being compelled to work out his own course and this when thru college will enable him to adapt himself better to the different positions that are open to the college graduate.

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Tho the labor income may be used for comparing one farm with another or with some

FAIR BASIS business, it is
FOR COMPARISON. not, however, a
fair basis for

comparison. There are other factors that must be taken into consideration. One farm may have a labor income of \$1000 and another one of \$500 yet it cannot be said that the one farm is twice as productive as the other nor can it be said that the farmer is not making more than the business man re-

ceiving the same wages. Labor income does not give credit to the farm for what it contributes to the family living.

In a survey of forty farms recently made, it was found that the average farm contributed annually nearly \$500 to the family living. When this amount is added to the labor incomes found above, it will give us a fair measure of the profitableness of the farm, and at the same time it will furnish a basis either for comparing one farm with another or with some other business. It will be found that in reality the one farm is only $1\frac{1}{2}$ times as productive as the other, instead of 2 times as shown by the labor income. It will also be found that in comparing labor income as the farmer's earnings with the wages of the professional man that allowance must be made for what the farm contributes to the family living.

The tendency has been to figure the farm business upon a wrong basis. Professional men, merchants and lumbermen, all look upon their business differently. Their affairs are not so closely related to the home and it is easier for them to keep them separated from it. So in order to make a fair comparison between two farms, or between a farm and a business in a city or village the two must be figured as nearly as possible on an equal basis.

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Twenty million issues of farm papers are printed each week and a good proportion of these

READING ROOM are printed in the
IN TOWNSHEND. corn belt section
of the United

States. The printed word of agriculture goes to far more farmer's homes than the spoken word can ever hope to go. Probably each staff of the 400 agricultural papers in the United States, in-

cluding contributing editors and special writers average close to 60 persons.

Yet the agricultural students at our own college have been deprived of the use of a reading room which was formerly used by approximately 100 students for one hour each per day. About 1915 when agricultural extension began to assume extensive activities the reading room was moved from the present office of the extension department to the improvised room directly opposite the entrance of Townshend, now used as a storage room. In 1915 the reading room was abolished to provide quarters for the department of extension schools and farmers' institutes. Farm papers were sent to the Library reading room but a large number were taken off the list so that now only a few farm papers grace the halls of a University supported by a land-grant act and which has one-fourth of its students studying agriculture.

As has been suggested the removal of the west stairway would allow ample space for a reading room in Townshend Hall. All the papers that are needed would be furnished on exchange by The Agricultural Student and the agricultural students could then note farm progress as reported by the press with the same degree of satisfaction as the students in five other halls on the campus. Will you not be one of the first to ask for a reading room?

Students in the College of Agriculture, The Agricultural Student extends to you a hearty welcome and wishes that you may enter on this year of work with a spirit that will make for the best in Ohio State. Many

of you already are acquainted with the activities on the campus and in the agricultural college and appreciate the benefits that may be gotten thru doing work in some of the societies in the college.

The training that one may get in a literary society we believe should not be overlooked by agricultural students even tho they are intending to do nothing more than just go back to the farm when they are thru college. Today the world is demanding men who have initiative and are able to get on their feet and express themselves when they are called upon. Time may come when you yourself may be asked to give a talk before some meeting. If you want ability to speak the only way you can get it is by speaking and the literary society gives you this opportunity.

Townshend Agricultural Society, the organization controlling this publication meets every Monday evening and literary programs consisting of debating, talks and other literary work are given. Among the technical societies in the agricultural college are the Saddle and Sirloin Club whose membership is made up of students in animal husbandry, the Horticultural Society and the Home Economics Club. They all are worthy of your support.

Identify yourself with one of these societies and receive a little of the benefit that may be gotten by doing work in one of them. Make it a point that you are going to get a little more out of your college work than just what can be gotten out of books. Remember always that it is the man who is able to give what he has, tho he has less, and not the man who has more and is not able to give, that is in demand.

**JUST A
WORD.**

Home Economics Department

THE SELECTION OF FOOD

EDNA N. WHITE, Ohio State University

A FEW generations ago when people produced much of their **own food** and transportation facilities were not so well developed, the variety of food at hand was not so great as at present and the problem of selection not so complicated. The choice of food for the family under our modern conditions is a great responsibility and must be so recognized. The physical deterioration which results from an inadequate food supply due either to lack or poor selection, saps the vitality of any nation.

The contribution made by the German women during the present war is one of the most remarkable in history. The scientist led the way in showing how to select, but the application had to be made in the individual households. At the present time any progressive farmer or stockman can tell what kind and amount of food is being given to the calf or the pig, but not many women in these same families have an equivalent knowledge of the food served on their tables.

To properly select food its composition must be understood and interpreted in terms of nutrients. Most of our food materials contain more than one nutrient and, while it is impossible and unnecessary to remember exact figures, it is not too much to ask that the one who selects the food should have in mind the general composition of the food materials used. The uses of the various nutrients and that some are apt to be furnished in small quantities, is fairly well known, and it is not difficult to learn what nutrients are

furnished by the various food materials and to plan menus so that desirable combinations are made.

The condition that probably has the largest share in determining the food selection or purchase is that of palatability. No matter how nutritious food may be, if it is not relished the value is largely lost, because it will not be eaten. On the other hand palatability is largely determined by the preparation and the selection may be unduly restricted because the cook can prepare only a few foods well. The housekeeper has a responsibility for acquiring enough methods of preparation of palatable dishes to give her family a sufficient variety.

The season of the year and the accessibility to good markets sets a limitation on selection. As a general rule out of season foods are not so good in flavor and are expensive. It must always be remembered that cost is not a measure of the value of a food, and a cheap dietary is not a panacea for all the ills of society, but people must realize that saving in food expenditure does not necessarily result in detriment to health and may contribute materially to the general welfare of the family.

Rarity, flavor, distance and market, seasons and other factors enter into money cost. Plant foods as a whole are cheaper than animal foods; the cheapest foods being cereals and legumes. The fuel cost must always be included in estimating the money cost of any given food. The cost of time and labor is too often overlooked, because the

housewife does not properly value her time. The average housekeeper has no time nor energy to spend in the preparation of fancy dishes, even if these were desirable. If she gives her family a sufficient quantity of plain food, wide

enough in variety to include all the food elements needed, well seasoned and attractively served, she has met her responsibility in the matter of food selection.

NEW BUILDING NOT READY.

Owing to strikes and delays in getting material, the new home economics building will not be ready for occupancy before November 1. Classes in home economics have been arranged temporarily in different buildings about the campus.

The new building which is a three story brick structure, will cost approximately \$150,000. It provides for a textile laboratory for the freshman girls in their study of textiles; a large room for work in institutional management and an experimental flat to be used in connection with the courses in house decoration and household management. The extension department will have a laboratory for demonstration work and also a large room will be used by women who come for instruction during Farmers' Week. On the second floor there will be an auditorium with a stage and a seating capacity for 500 people.

CONDUCT EXTENSION SCHOOLS.

During the past year forty-five extension schools for village and farm women were held in connection with the men's agricultural schools. These schools were of 5 days' duration and had an average attendance of 49 and a total of 2179 women. Two instructors were sent to each school. The work included demonstrations and lectures on foods and their preparation, dress and on household management.

The department also conducted 51 schools in connection with the county

normal schools. These schools were of 5 days' duration and were established for the training of village and rural teachers. The work was given in co-operation with the state superintendent of public instruction, with the purpose of developing an interest and a point of view for the work that would encourage and strengthen subsequent teaching along this line. Owing to the limited time, the work was confined to the subject of foods.

USE HOT FOOD FOR LUNCHESES.

The use of hot food for school lunches has been demonstrated in more than 50 rural schools in 18 Ohio counties during the past year under the direction of Treva E. Kauffman, specialist in home economics for the Agricultural College Extension Service, Ohio State University. About 25 one-roomed schools have used school lunch sheets prepared by the extension department as a text for home economics work, and 20 centralized schools have prepared hot dishes at the noon hour to supplement the lunches brought by the pupils. In schools where no lunches were taken by the children five or six dishes were prepared and served.

In a number of communities the parents of the children witnessed the demonstrations given by the specialist and contributed food and practically all the dishes and cooking utensils required. At the 50 lunch centers 1,560 school children were instructed in home economics work.



ADAPT AGRICULTURE TO NEEDS OF COMMUNITY.

Time has passed when the value of agriculture in the public school curriculum is questioned. Educators agree that modern social and industrial conditions demand a new kind of education. Boards of education have responded to this demand for industrial training and have hired teachers especially trained for the work and have equipped laboratories in which to do the work. There are now few high schools that are without courses in manual training or home economics.

This has not been so in the case of agricultural education. While educators are agreed as to the necessity and value of agricultural instruction in communities where agricultural interests are dominant, yet in many cases agricultural equipment has not been provided and in other cases the instruction has not been adapted to the community whose interests are to be served.

School authorities should not be criticized for this lack of equipment for agricultural instruction. This has been due to a lack of means and instead of enlarging the expenditures for agricultural education, they have been curtailed even tho improvements were needed. There is no more reason why tin cans, bottles and paint pails should be used

in the teaching of agriculture than in the teaching of chemistry, botany, or any of the other sciences.

The lack of a properly trained teaching force has been another cause for the lack of greater progress in the teaching of agriculture in the schools. However, graduates of the agricultural colleges are turning to the field of teaching and already many high schools are giving excellent instruction in agricultural subjects.

Tho the laboratories may be well equipped and the teachers properly trained, agricultural instruction will not be successful as long as it is divorced from the community. The prejudice against "book agriculture" is becoming less because people are beginning to see that the text book work of our agricultural colleges is being combined with the laboratory work and actual practices, that farmers are realizing that it is practical. The public school, however, has a better opportunity for combining the theoretical instruments with the practical than has the agricultural college since it is right in the community which it is to serve.

Much can be done when the class in agriculture is located in an agricultural community. At this season of the year, exercises in field selection of seed corn may be conducted; trips may be made to nearby farms, orchards and poultry yards; farm animals may be brought to the school for work in stock judging; implement stores may be visited; and many other places that furnish valuable material may be visited.

For giving the class in agriculture actual practice, no better opportunity can be found than in the combination of the class instruction and the work of a properly organized boy's agricultural club. In addition to the work conducted by the State Board of Agriculture, the

extension department of Ohio State University has cooperated in advancing this movement. Clubs have been organized in 50 counties of the state. The county or district superintendent is often the club leader. On June 30 the records showed an enrollment of clubs thruout the State as follows:

Pig clubs, 628; poultry clubs, 632; home making clubs, 1657; Dairy cow record, 84; potato clubs, 125. The predominating agricultural interest usually determined what kind of a club was organized in a particular community.

Club workers have exhibited products at county and local fairs. Whenever the school authorities have cooperated in the club work, the attention of the school patrons was drawn to the school agriculture as well as to the club efforts with the result that the patrons felt that something worth while had been accomplished.

Until its duty to the community at large is appreciated, the work in public school instruction in agriculture will not accomplish its highest purpose. Teachers may cooperate with the State and National Departments of Agriculture in this work. Farm management demonstrations which have been beneficial to many communities may be arranged. Demonstrations in spraying,

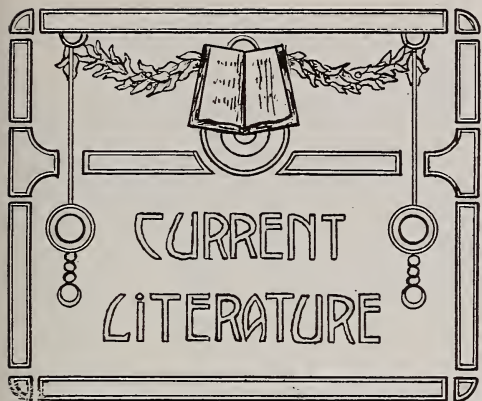
packing of fruit, in agricultural engineering, treating seed wheat and oats for smut, feeding of livestock, and other farm practices may also be arranged. Valuable experience can be secured and the community can be aided as well by having the classes in agriculture test seed corn for the farmers.

It would be within the province of the department of instruction to provide rural reading and to organize lecture courses and community clubs. Each school can select the form of work best adapted to the community and which meets best the needs of the community. Tho this work will add considerably to the burden of instruction, it is within the scope of the department of instruction and it will result in the increased cooperation of the community with the class room work of the school. RAY FIFE, '17.

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Jesse E. Whonsetler, '16, of Creston; Leon M. Evans, '16, of Rocky Hill; Ralph Q. Smith, '14, of New Carlisle; Archie J. Bishop, '15, of Delaware; Otho H. Pollock, '12, of Delaware, and F. C. Marshall, '10, of Bluffton, are assisting in the boys' and girls club work carried on by the extension department. They have charge of the boys stock judging contests at the county fairs.





Any of the following books may be purchased directly from the publishers or thru The Agricultural Student. Special combination offers are given with this magazine.

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“Automobile Repairing Made Easy” by Victor W. Page, is a treatise in which every process incidental to motor car repairing is outlined in a manner that it can be understood by anyone. It gives plans for workshop construction, suggestions for equipment, power needed, and the tools necessary for repairing the automobile. Beginning with the engine, the author then takes up the work of the carburetion, ignition, cooling and lubrication systems after which the clutch, change speed gearing and transmission systems are given consideration. In addition, the book also contains special instructions on electric starting, lighting and ignition systems, tire repairing and rebuilding, and other practices connected with the operation of the automobile. 1060 pages, \$3.00 net, Norman W. Henley Company, New York.

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The book “Elements of Farm Practice” published by the Webb Publishing Company, St. Paul, reviewed in the September issue should be listed at \$1.00 instead of \$1.25.

That agricultural education has passed the experimental stages is now recognized as a reality. With each year more attention is given to systematizing of agricultural teaching and less to experimental methods. Country communities are demanding that their schools educate in terms of rural life. This is being met by the colleges and Universities in the courses that are being offered in rural leadership, agriculture, home economics and manual training. This training, however, is not available to everyone. “Agricultural Education for Teachers” by Garland A. Bricker, is a book in which is recorded the knowledge and wisdom gotten thru a decade of observation, experience and study. 172 pages, \$0.80. American Book Company, Cincinnati.

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“Rural Life and the Rural School” by Joseph Kennedy, is a book put out in the interests of rural life and the rural school. In the discussion the author avoids speculative theories and addresses himself to the intelligent individual everywhere. To the farmer and his wife, to the teachers of rural schools, and to the leaders of rural communities and of local centers generally does this work especially appeal. 189 pages, \$0.80. American Book Company, Cincinnati.

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“Sweet Corn” by Albert E. Wilkinson, is a treatise giving in detail information regarding the culture of sweet corn. The material in the book is divided into three parts: In Part I the author sets forth the principles and practices of growing sweet corn that are for the home gardener. In Part II, the subject is handled from the commercial end, applicable to the market grower for the large cities and the shippers of sweet corn at more distant

points. Part III is given over to the raising of corn for canning and to the process of canning. 203 pages, \$0.75. Orange-Judd Company, New Yor.

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“The Federal Farm Loan System” by Herbert Myrick, is a practical manual in which is taken up the organizing and conducting of the national farm loan associations and joint stock land banks. The purpose of the work is to show how farmers, investors, bankers and the public in general may obtain the fullest benefits from the new system. The author also discusses the purpose of the Act, the principles of the Statute and the part that the individual farmer has in it. It is written in a clear and concise manner and it is easily understood. 239 pages, \$1.00 net. Orange Judd Company, New York.

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“The Manufacture of Ice Creams and Ices” by J. H. Frandsen and E. A. Markham, is a book in which has been gathered all the available scientific information relating to the subject of ice cream making and presented in a scientific and practical manner. In it is considered all the different phases connected with making ice cream including the cream supply, bacteriology of ice cream making, the care of milk and cream at the factory, flavoring, preparing the mixture, the freezing process and refrigeration. In addition chapters are devoted to the factory, its location and equipment; factory management, and to by-products and side lines connected with the making of ice cream. 315 pages, \$2.00 net. Orange Judd Company, New York.

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“The Breeds of Livestock” by Carl W. Gay, has been revised, rearranged, amplified and brought up to date by the author with the view of making the

book serve as a handbook for the breeder and a textbook for the student. The study of the breeds is comprehensively conducted under the headings of history, description of the typical representative, uses to which the breed is best adapted, and the organizations which promote the interests of the breed and record the pedigrees. The author believes that the breeder who will get the most out of the respective breed with which he is working, is the one that is best informed as to the inherent possibilities of their livestock, and he brings this before his readers in a concise and scientific manner. 483 pages, \$1.75 net. The Macmillan Company, New York.

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“Concrete on the Farm and in the Shop” by H. Colin Campbell, is a practical treatise on the common every day uses of concrete. It is written in a way that even the inexperienced person can undertake a piece of concrete work by following the directions given. Instructions are given for the construction of tanks, troughs, cisterns, fence posts, floors, walls, foundations and many other structures needed about the farm or shop. 149 pages, \$0.75. The Norman W. Henley Company, New York.

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“Practical Silo Construction” by A. A. Houghton, is a treatise in which is explained the most simple and easiest methods of constructing concrete silos of all types. The author has shown the requirements of silo construction that are needed to insure success, and the best methods of complying with these requisites. The foundation is given especial attention as the author is a firm believer that a structure can be no stronger than its foundation. 69 pages, \$0.50. The Norman W. Henley Company, New York.



Ralph Q. Smith, '14, is farming at New Carlisle, Ohio. He is making a specialty of breeding Percheron horses.

E. A. Baumiller, '14, is farming at Nutwood, Ohio.

Oscar F. Boyd, '14, is teaching chemistry in Wilmington College, Wilmington, Ohio.

W. W. Lanning, ex-'15, is farming at Dresden, Ohio.

H. A. McConaughy, '12, is farming at New Concord, Ohio.

Charles F. Kreidler, '11, is located at Warren, Ohio, where he is following dairy work.

Samuel N. Kerr, '11, is in the orchard business at Hubbard, Ohio.

Karl Hirn, '14, is farming at Spencerville, Ohio.

H. A. Stevens, '15, is county agricultural agent at Jeffersonville, Ind.

Albert O. Becker, '15, is teaching chemistry in the Oklahoma State Agricultural and Mechanical College, Stillwater, Okla.

David C. Reisling, '15, is operating a fruit farm at Mingo Junction, Ohio.

Knott C. Egbert, '90, is county agricultural agent of Sandusky County, O., with headquarters at Fremont.

Joseph H. Gourley, '08, is professor of horticulture at the New Hampshire Agricultural College, at Durham.

William G. Phillips, '15, is farming at Cadiz, Ohio.

Glenn G. Hayes, '12, is managing editor of Better Farming, located at Chicago. He was formerly editor of American Farming which was also published at Chicago.

Clyde A. Waugh, '12, is manager of the editorial department of the Middle West Soil Improvement Committee, with headquarters in the Postal Telegraph Building, Chicago, Ill.

S. M. Fenn, '16, is teaching agriculture in the high school at Kingston, Ohio.

F. N. Pattengill, '15, is herdsman at the Ohio Agricultural Experiment Station, Wooster.

Edward Kirkendall, '14, is working in the extension department at Purdue University, LaFayette, Ind. He took his Master's degree in soils at Ohio State University in June, 1916.

Phil E. Richards, who took his Master's degree in soils at the Ohio State University in June, 1916, is now working in the Agricultural Experiment Station at College Park, Md. He is doing soils investigation work in connection with Prof. A. G. McCall, formerly head of the department of agronomy at Ohio State University.

Russel Pearson, '16, is teaching science and agriculture at Bethel College, Bethel, West Virginia.

Donald Hughes, '16, is doing farm survey work for the extension department at Ohio State University.

Francis Marshall, '12, is farming at Bluffton, Ohio. He also, during the winter, teaches at Bluffton College as well as have charge of the contest work done by the extension department in that community.

Raymond M. Carr, '16, is teaching agriculture in the high school at Spencer, Iowa.

Paul Pugh, '16, is farming at Arlington, Ohio.

Max M. Phillips, '16, is with the Canton Pure Milk Company, Canton, Ohio.

J. R. Stear, '16, is located at Lodi, Ohio, where he is doing investigation work in entomology for the Ohio Agricultural Experiment Station.

Aaron F. Head, '16, is instructor in the department of soils at the Michigan Agricultural College, East Lansing, Mich.

E. M. Lapp, '12, is running a farm near Walhonding, Ohio.

C. M. Morris, ex-'12, is farming at Shandon, Ohio.

J. P. Markley, '05, is resident manager of the Northeastern Ohio test farm of the Ohio Agricultural Experiment Station which is located at Strongsville.

O. P. Humphrey, '03, is farming at Glenmont, Ohio.

Frank Ruhlen, '96, is located at Plain City, Ohio, where he is running a dairy farm and making a specialty of breeding Holstein cattle.

Lewis L. Guard, '16, is farming at Elizabethtown, Ohio.

M. E. Laird, '07, is farming at South Charleston, Ohio.

W. W. Ellenwood, '15, is farm superintendent of the Patterson farm, Coalton, Ohio.

R. R. Fry, ex-'12, is florist at the Athens State Hospital, Athens, Ohio.

Walter E. Foster, '16, is farming at Thornville, Ohio.

F. W. Truxell, '14, is located on a farm near Norwalk, Ohio.

W. A. North, '16, is farming at Urbana, Ohio.

Herbert L. Andrew, '15, is assistant in the department of farm management at the Ohio Agricultural Experiment Station, at Wooster.

Charles E. McAnall, '15, is operating a farm near Mt. Gilead, Ohio.

F. H. Carter, '13, is farming at Springfield, Ohio.

J. E. McClintock, '06, is supervisor of publications for the extension department at the Ohio State University.

Ernest J. Riggs, '95, is county agent in Washington County. He is also running a farm in Gallia County. He intends to withdraw from the county agent service to devote his full time to farming.

Ralph W. Munger, '07, is manager and owner of the Alpha Seed and Grain Company, Xenia, Ohio.

H. W. Boyd, '13, is farming at Shepard, Ohio.

Paul Gerlaugh, '13, is assistant professor of animal husbandry at the Pennsylvania State College, State College, Pa.

W. H. Darst, '10, is professor of agronomy at the Pennsylvania State College, State College, Pa.

Walter Williams, '14, is managing a livestock farm at Wilmington, Ohio.

Lester J. Lane, '13, is farming at New Burlington, Ohio.

Walter F. Jackson, '15, is running a farm at Westerville, Ohio.

Marion F. Detrick, '12, is operating a farm at Bellefontaine, Ohio.

F. H. McGuffey, '94, is located at Conover, Ohio, where he is making a specialty of raising onions and hemp.

E. P. Maxwell, '15, is working in the office of the State Veterinarian, Columbus, Ohio.

C. E. George, '15, is working in the dairy and food division of the State of Ohio.

Loyt B. Poulson, '13, is farming at Orient, Ohio.

E. E. Finney, '05, is managing a farm at Cedarville, Ohio.

W. R. Wheelock, '13, is working for the National Cash Register Company, Dayton, Ohio.

Albert O. Hayes, ex-'16, is operating a farm near Springfield, Ohio.

L. D. Risser, '08, is farming at Columbus Grove, Ohio.

C. G. Foster, '05, is farming at Mt. Sterling, Ohio.

A. R. Page, '11, is farming near Denison, Ohio.

C. W. Hengst, '08, is managing a farm at Lancaster, Ohio.

L. E. Barb, '16, is farming at Pataskala, Ohio.

R. P. McClellan, '12, is farming at Xenia, Ohio.

S. H. Shawhan, '07, is farming at Xenia, Ohio.

F. L. Morrison, '16, is farming at Kenton, Ohio.

M. D. Moore, '09, is operating a garden and truck farm near Columbus, Ohio.

E. T. Davies, '16, has a position with the Goodrich Tire & Rubber Co., of Akron, Ohio. He was business manager of the Agricultural Student last year.

Chas. E. Snyder, '09, is editor of the Farmer's Review, published at Chicago, Ill. He was formerly assistant editor of the National Stockman and Farmer of Pittsburgh, Pa. He was editor of The Agricultural Student in 1908 and 1909.

Ralph F. Crim, '13, is instructor of agriculture in the schools at Slayton, Minn.

Ray P. Jones, two-year course, '15, is farming at Kenton, Ohio.

V. A. Place, '12, is county agent in Wabash County, Ind.

Byron E. Pontius, '14, is director of animal husbandry department in the State School of Agriculture, Alfred, New York.

Lawrence W. Adam, '15, is farming near Middleport, Ohio.

Trell W. Yocum, ex-'16, is on the editorial staff of the Ohio Farmer at Cleveland.

Kenneth Haneher, '15, has a position in the department of agricultural chemistry at the Michigan Agricultural College at East Lansing.

John C. McNutt, '07, is at the head of the animal husbandry department at the Massachusetts State College of Agriculture at Amherst.

Andrew S. Wing, '15, is with the Wing Seed Co. of Mechanicsburg, Ohio.

Glenn Roberts, '15, is manager of a grain elevator at Findlay, O.

James R. Walker, '14, is teaching agriculture and horticulture in the schools of Westtown, Pa.

H. H. Richardson, '10, is operating a truck farm at Brooklyn Station, Cleveland, Ohio.

S. W. Phillips, '15, has a position with the soils department of the U. S. Department of Agriculture. He is located at Baltimore, Maryland.





OCTOBER NEWS NOTES

BULL EFFECTS HERD RECORD.

That the selection of a bull without reference to his breeding or the record of his dam may result in serious loss to the farmer or dairyman thru the development of low producing individuals, was brought out at an exhibit of dairy cattle at the Ohio State Fair. With the cooperation of the Ohio State Board of Agriculture, 12 cows were brought from the Winona Cow Testing Association, Columbiana County, where they have been on a test for 4 years. The exhibit was in charge of the Dairy Department, Ohio State University.

Six aged cows and a daughter of each were shown; three daughters being sired by Bull A, and three by Bull B. The cows that were bred to Bull B had average records of 327.3, 293.9 and 322.5 pounds, while their daughters sired by B have estimated records of 326.7, 242 and 296.6 pounds respectively. The average decrease in production was 26.4 pounds for each cow per year.

The three other cows were bred to Sire A. Their records were 300.6, 345.5 and 365.2 pounds, respectively. Their daughters sired by A have estimated records of 358, 402.1 and 395 pounds, respectively. The average increase was 47.9 pounds more than that of their

dams. (In estimating the record of the daughters their actual production was taken with their age, and 0.1 pound of butterfat was added for every day until they would be 5 years of age. This is the requirement for the breed in qualifying for the Register of Merit.)

If the dams of the low producing daughters had been bred to Sire A the daughters would have produced 74.3 pounds of butterfat more than their estimated records. They produced 26.4 pounds on the average less than their dams while the other three made records of 47.9 more than their dams, the sum of these two amounts being 74.3 pounds.

Sire A has 19 daughters that have an average production of 336.2 pounds of butterfat, while 14 daughters of Sire B have an average record of only 232.9 pounds.

The officials in charge of the exhibit pointed out the necessity of testing cows and the practice of selecting bulls from dams whose records are 400 pounds, or more, of butterfat for one year. Where a farmer or dairyman is in a cow testing association the records of all the cows are known with their sisters if they are in the herd. When a likely bull calf appears a record of

his dam and possibly his sisters can be secured. Before the bull is 5 years of age his own progeny would have a 1-year record. The records of his daughters would give a final indication of his ability. If the bull is selected from another herd similar records should be studied.

In the Winona Cow Testing Association where 300 cows have been on test for 4 years, the average butterfat production in 1913 was 285.6 pounds; in 1914, 291.5 pounds, and in 1915, 300.8 pounds. The gradual increase is attributed to the use of better bulls.

INSTRUCT AT NORMAL SCHOOLS.

H. E. Eswine, specialist in public school work, will begin instruction in county normal schools September 18. His work will deal with the teaching of public school agriculture and demonstrations in hand work such as rope splicing. Home economics specialists will also give demonstrations at the normal schools when their services are not required at extension schools.

STUDENTS' JUDGING CONTEST.

The annual students' judging contest at the Ohio State Fair was held on Tuesday, August 29. Four classes were made up consisting of two rings each of cattle and hogs and one each of horses and sheep. Professors Joel S. Coffey, Tom C. Stone and Schuyler M. Salisbury acted as judges.

Prize money amounting to \$100 was divided into four classes of \$25 each, with three prizes of \$10, \$8 and \$7 each in each class. The money awards were as follows: H. B. Marshall, \$29.50; Griff Eidson, \$25; Bernard Hatten, \$17; M. D. Feller, \$10.50; G. L. Cassel, \$10; H. Coulson, \$8.

The results of the judging of the classes were as follows: Horses—First,

H. B. Marshall; second, Griff Eidson; third, M. D. Feller. Cattle—First, G. L. Cassel; second, H. Coulson; third, M. D. Feller and H. B. Marshall tied. Sheep—First, Griff Eidson; second, H. B. Marshall; third, Bernard Hatten. Hogs—First, Bernard Hatten; second, H. B. Marshall; third, Griff Eidson.

BOYS TO GET PIGS WORTH \$300.

With two more purebred gilts recently donated for the boys' pig club contest this fall conducted by the Agricultural Extension Service of The Ohio State University, the youngsters will have a chance to compete for a bred gilt of each of the six most common breeds of hogs in Ohio. Each pig is declared by W. H. Palmer, state leader of boys' and girls' club work, to be worth \$50 or more. The breeds of hogs and the names of donors are: Poland China, E. W. Foster, North Hampton; Berkshire, W. H. Palmer, Thurston; Duroc-Jersey, Howard Gerlaugh, Osborn; Chester White, Charles Wenger, Clayton; Yorkshire, Don Acklin, Perysburg; Hampshire, John W. Wuichet, Dayton.

APPLE SHOW IN DECEMBER.

The Horticultural Society held its first meeting of the year on Wednesday, September 27. At this meeting the plans were made for the annual apple show which is to be held from December 14 to 16.

Isaac P. Lewis was elected president of the society, Melvin E. Wyant, vice president, and Eleanor D. Smith, secretary and treasurer. Clarence E. Dutton, Joseph E. Fouser, Howard J. Ruetenik and Carl R. Shotwell were appointed on the apple show committee.

In connection with the show will be held the Inter State Students' Apple

Judging Contest, at which time teams from seven other universities will attempt to wrest the honors won by the Ohio State team last year. Sixteen classes with added attractions of different apple products and pie baking contests will make up the show.

B. D. Drain, senior, and Thomas L. White, senior, spent their summer vacation working in the large mountain orchard of Tom L. Smith, '13, near Cumberland, Md.

TOWNSHEND AG SOCIETY MEETS.

With 250 students present, Townshend Agricultural Society held its first meeting of the year on Monday, September 25. Talks were given by Dean Alfred Vivian, Clark S. Wheeler of the extension department, Prof. Firman E. Bear of the soils department, Tom C. Stone of the animal husbandry department, Prof. Harry C. Ramsower of the agricultural engineering department, and Prof. Paul L. Vogt of the rural economics department. Cider, apples and doughnuts were served as refreshments. Sixty names were submitted for membership.

The following officers were elected: President, Ray Fife, vice president, H. W. McChesney; secretary, E. W. Budd; treasurer, A. J. Phillips; censor, V. G. Applegate; assistant censor, Orpha N. McCartney; critic, W. D. Hunnicutt; sergeant-at-arms, R. E. Moser; pianist, Ruth E. Christen; members executive committee, Bernard Hatten, Wm. Cooper and F. C. Evans.

ATTEND FARM LOAN MEETING.

All students in the junior and senior classes in the College of Agriculture were dismissed on Wednesday, September 27, to attend the hearing of the farm loan board, held at the Hartman

Theater. The Federal farm loan board which is composed of five members came to Columbus to determine the location in this district of one of the 12 farm loan banks which will be the nucleus of the new rural credits system.

Among the speakers at the meeting were Homer C. Price, former dean of the College of Agriculture, and Prof. Oscar Erf of the dairy department. The members of the board are: Secretary of the Treasury, William G. McAdoo, Charles E. Lobdell, Captain W. S. A. Smith, Herbert Quick and George W. Norris.

NATIONAL DAIRY SHOW.

With 1500 cattle on exhibition, and over 50,000 square feet of floor space given over to exhibitors the 1916 National Dairy Show will be held at Springfield, Mass., October 12 to 21. Included in the exhibit will be some of the finest dairy cattle in America besides a large line of modern appliances for the dairyman, ice cream manufacturer, butter-maker, creameryman and anyone else connected with the business of dairying.

Special features at the show will be demonstrations of a country milk bottling establishment, and of the milking machine. Buttermilk, cream and cheese from all over the United States will also be exhibited at the show.

HAS EXPERIMENTAL PLAT.

With a view of increasing the yield and for demonstration purposes in the laboratory, the department of farm crops has an experimental plat in which they are growing several species and varieties of wheat. It is the purpose of the department in these experiments to give people an idea of what the different species of wheat are like.

The department has a number of hybrids of the different kinds of wheat on which some study has already been made, that will be used in these investigations. It is hoped to find some variety or species that will be of use in improving the yield. Two methods are used in improvement; head selection where the best heads of wheat are selected and used for seed the following year, and by hybridization.

To find out the effect that the different methods of seeding have on the growth of the alfalfa plant, the 30-acre field on the University farm which was ruined by the flood last winter was divided into three parts and reseeded. Ten acres were seeded with barley and 10 acres with oats as catch crops, and 10 acres were seeded alone. The growth of the alfalfa in each part will be noted and the effect determined.

DEMAND FOR RURAL SPEAKERS.

Providing speakers for farmers' picnics, summer grange meetings and other rural associations has been a feature of the extension activities carried on by Fred L. Allen, supervisor of farmers' institutes and extension schools, during the summer. Fifty talks have been given by lecturers sent out by the Agricultural Extension Service. The average attendance of all meetings was 730.

Community interests and rural betterment have been the basis of all the talks. Professor Paul L. Vogt, Ray Fife, John Begg and a number of farmers' institute speakers have assisted in this work.

SEND EXHIBITS TO SHOW.

A poultry exhibit, covering table and wall space of 600 square feet, prepared by M. C. Kilpatrick and H. E. Eswine

of the Agricultural College Extension Service, Ohio State University, will be shown at practically all the poultry shows over Ohio this fall and winter.

The exhibit lays special emphasis on housing and feeding, six different types of poultry houses being shown. They range from the commercial poultry house for the farm flock to the backyard coop for a few hens. The feeding material shows the proper mixtures for laying hens in summer and winter, for young chicks and fattening rations. Fattening crates and batteries, trap nests, wall nests and nests for sitting hens are shown.

Problems in breeding and marketing are also treated to photographic and chart form.

BALANCED FARM IS PROFITABLE.

"Experience justifies that a well-balanced farm is the most profitable," says G. N. Dagger of the Agricultural College Extension Service, Ohio State University. "That is another way of saying that it pays the farmer to give his attention to the weakest places in farm organization, for the leaks in some part of the farm business may drain the profits from other enterprises on the farm." An example of this is shown in the comparison of the management on the same farm operated under normal conditions for two successive years.

	1914	1915
Crop yield.....	Av.	Av.
Labor efficiency.....	Av.	Av.
Number of cows.....	17	17
Livestock receipts per \$100 worth of feed	\$76	\$176
Milk receipts per cow	\$89	\$180

"The same farm was operated under normal conditions one year after

the other. The size of the business was practically the same for the two years. The weakest place in the first year's business was the quality of livestock. The same amount of feed was fed each year and the proportions of feed bought and grown were approximately the same as the year before.

"The operator of this farm studied this part of the business and proceeded to eliminate the unprofitable cows. These results were secured in spite of the general dissatisfaction among dairymen regarding market conditions.

"The operating expenses and the miscellaneous receipts remained the same for each year. Practically the entire increase in the productive ability of the herd was registered in the net results of the year's business. That is, the labor income was increased more than \$1,500. The cows put the farm from the minus well into the plus column."

TO DO LANDSCAPE WORK.

R. B. Cruickshank of the Agricultural College Extension Service will lay out, rearrange and plan the grounds for schools, churches and rural clubs during the fall months. Home grounds improvement work will be continued, and the central office will continue mailing plans. Visits will be made to localities asking for special assistance.

SMUT CAMPAIGN BENEFICIAL.

Results of the oats smut campaign held in Mahoning County last spring by Agent D. W. Galehouse show that fifty fields of oats sown with formaldehyde-treated seed were practically free from smut. Only a trace, estimated at less than one-thousandth of 1 per cent could be found. Where untreated seed was used, however, the loss is from 3 to 25 per cent. On untreated areas it was possible for Mr. Galehouse to pick thir-

ty-eight smutted heads without moving. In one field a loss of 20 per cent was noted in an untreated area.

SIX COWS MAKE HONOR ROLL.

By producing 40 pounds of butterfat or 1,000 pounds of milk in a month a cow in the First Portage County Cow Testing Association is entitled to a place on the honor roll. During July six cows met these requirements. Of these, four are grade Holsteins and are owned by J. F. Merkel. One calving on June 27 produced 1,494 pounds of milk and 56.8 pounds of butterfat. Another freshening on March 8 gave 1,202 pounds of milk and 43.3 pounds of butterfat. The third cow calving on March 26 produced 1,305 pounds of milk and 44.4 pounds of butterfat and one freshening on January 1 gave 1,373 pounds of milk and 45.3 pounds of butterfat. A pure-bred Holstein gave 1,292 pounds of milk and 67.2 pounds of butterfat. Another grade Holstein, which freshened on July 9, produced more than 40 pounds of milk per day with a test of 3.8 per cent. This would amount to 44 pounds of butterfat in 30 days.

NEW COURSES ARE READY.

Beginning September 15, the Agricultural College Extension Service of the Ohio State University, will offer a number of new courses by correspondence. They are: Farm accounts, farm lighting systems, bee keeping, farm power, tobacco growing, vegetable gardening, swine farming, dairy farming, selection and preparation of food and home sanitation. Courses given last year which are available for new applicants are: Alfalfa culture, corn culture, potato growing, soil fertility, poultry farming, orchard fruits, sheep farming, concrete work on the farm and farm water supply and sanitation.

CLUB WORK AT COUNTY FAIRS.

Up to September 15, 29 Ohio counties held fair exhibits of the material produced by the members of the Boys' and Girls' Club Work in their respective localities. Forty-three counties started the project last spring and the remaining 14 will hold exhibits before October 12.

The pig club project has been the most popular with farm boys, altho there are more girls enrolled in home making clubs than the total number of boys in both the poultry and pig projects. There are 1,660 enrolled in home making clubs, 628 in pig growing and 653 in poultry raising.

FARM ENGINEERING IS POPULAR.

"Agricultural engineering has been the most popular of all the projects conducted by the Agricultural College Extension Service," says Geo. B. Crane, secretary of the central office. "More requests have been received for this service than could be taken care of during the past year, and two men are now required to give demonstrations in farm engineering projects."

During the fiscal year which ended July 1, 1916, Virgil Overholt, who is the leader in this work, planned and supervised the installation of water supply systems on 25 farms, directed the laying out of drainage systems of 3,000 acres and assisted in rearranging and planning farm buildings on 22 farms.

A total of 1,500 blueprints showing self-feeder plans for swine and 425 stock plans of farm buildings were mailed from the central office.

"Farmstead work which deals with location and rearrangement of farm buildings, the installation of septic tanks and water systems is most desired by farmers," says Mr. Overholt.

SPEAKS AT BANKERS' MEETING.

Ohio farmers do not need "whoop it up methods" to interest them in a better agriculture, according to Clark S. Wheeler, director of the Agricultural Extension Service of the Ohio State University, in an address September 13 at the twenty-sixth annual meeting of the Ohio Bankers' Association at Columbus.

"The greatest danger," said Mr. Wheeler, "to agricultural improvement at the present time is that of overenthusiasm, overexcitement and false advancement. The ill-considered beginning of an organization or enterprise usually leads to failure and that failure makes all the more difficult the final accomplishment of the end sought."

"While Ohio has \$200,000 of state and federal funds to spend at present for farmers' institutes, extension schools, county agricultural agents, correspondence courses and other lines of extension work, twice that amount would be necessary to supply the demand of the farmers and members of their families if it was entirely met."

"So long as the need is so great it would be a crime to waste a dollar of the money appropriated for agricultural extension. We are insistent that the funds which we control shall be wisely spent. We solicit suggestions of practical farmers and business men. We appeal to them in this matter, and we look forward to the time when the most intelligent methods of husbandry and the wisest plans of management will be the common custom on Ohio farms."

The annual fall farmers' institute normal and county agent conference will be held at The Ohio State University, College of Agriculture, October 24, 25 and 26.

BIG YIELD WITH FERTILIZERS.

Corn yielded at the rate of 67 bushels an acre and wheat at the rate of 18 bushels on the best plat at the Clermont County Experimental Farm. according to S. B. Stowe, the superintendent and county agricultural agent.

The rotation used is that of corn, soybeans, wheat and clover. Eight tons of manure and 200 pounds of acid phosphate were put on the corn land, and 200 pounds of acid phosphate and 50 pounds each of muriate of potash and nitrate of soda were put on the wheat land. No fertilizer was added to the soybeans and clover. The plot is drained.

GIVE FERTILITY TALKS.

More than 80 soil fertility meetings have been held up to September 15 by

M. A. Bachtell and W. E. Hanger, specialists for the Agricultural College Extension Service. A number of the meetings have been scheduled by the county agents, it being possible to hold two demonstrations a day when the agents arrange for the meetings. In other counties practically only one demonstration is given a day.

Testing soil for acidity, the use of lime to correct acidity, the use of fertilizers and manures and the preparation of seed beds are given equal consideration in the demonstrations. When desired, a home-mixing fertilizer demonstration is given.

The attendance at these meetings has varied from six to forty. Interest was generally centered in the use of lime to correct soil acidity, according to Mr. Bachtell.

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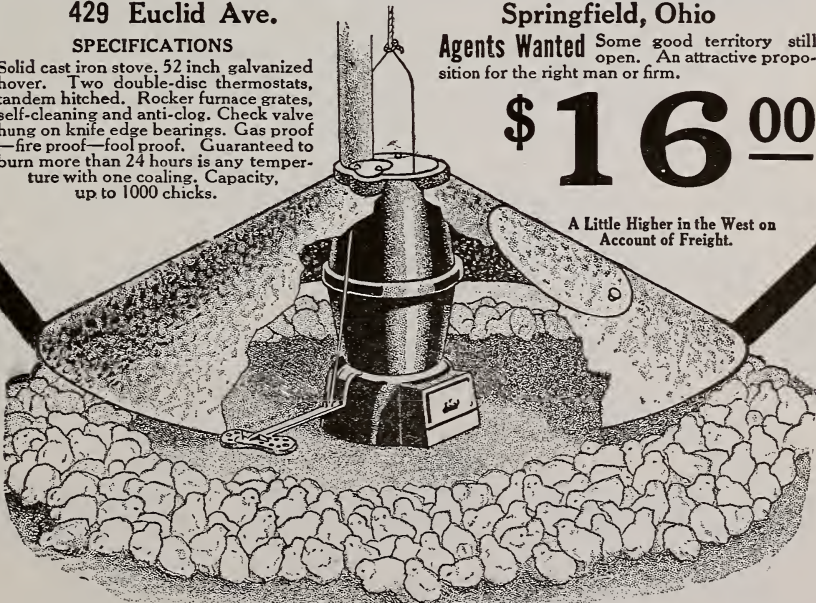
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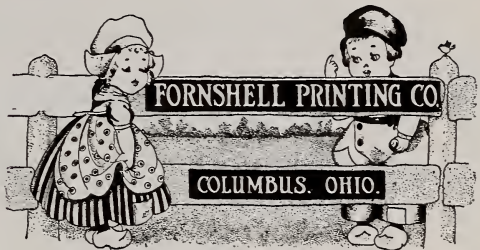
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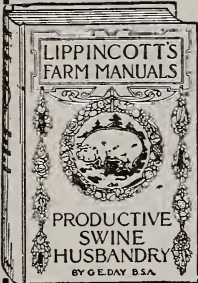
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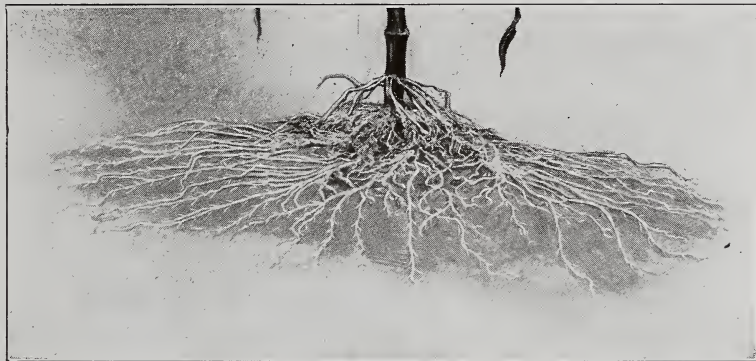
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